BOSTON UNIVERSITY

GRADUATE JOURNAL

A Review of Current Graduate and Research Activities

VOLUME VI FEBRUARY 1958 NUMBER 4

CONTENTS

The Graduate School and the University Idea . EDITORIAL 67

College Affiliation and Political Attitudes
MURRAY B. LEVIN and PHILIP NOGEE 69

The New Look in General Biology at Boston University: An Intercollegiate Approach
GEORGE P. FULTON and WESLEY F. TIFFNEY 77

Boston University Book Review . . ROBERT H. SPROAT 83
Fiction and the Unconscious. By Simon O. Lesser

The Naval War College Program of the Boston University Graduate School . . . . . ANDREW GYORGY 84

Slavic Languages and Literatures at Boston University
LEON I. TWAROG 90

A New Experimental Site for the Extrauterine Study of Mammalian Development . . THOMAS E. SMITH, JR. 93

The BOSTON UNIVERSITY GRADUATE JOURNAL is published five times a year (in October, December, February, April, and June) by Boston University, Boston, Massachusetts, and is edited by the Boston University Graduate School, 725 Commonwealth Ave., Boston 15, Massachusetts. Second class mail privileges authorized at Boston, Massachusetts.

Editor
FREDERICK M. LINK

Editorial Board
MALCOLM E. AGNEW JOHN F. LEISHER GEORGE K. LEWIS

Printed in U.S.A. BU - 1 - 58

The Graduate School and the University Idea

EDITORIAL

The early university was a group of scholars who lived and worked together. Its purpose was the preservation, systematization, and advancement of knowledge. Its underlying assumption was that knowledge is both intrinsically valuable and practically necessary to civilization. It made no organized attempt to meet the needs of a particular class or locale, nor, indeed, of a particular nation; if it met specific needs, it met them because wisdom was considered of more vocational worth than "vocational" training. Its fellows were free to study, and to communicate the results of their studies to the world at large. There were no students in the modern sense, and the fellows dictated the policy under which they lived and worked.

The modern university resembles the early one only superficially, particularly in America. Students, earlier admitted only as apprentice scholars, now constitute an overwhelming proportion of the university population. An administrative system, even an administrative caste, has come into being; the complexities of modern education are such that between the points of view of administration and faculty there is often a great gulf fixed. The old sense of community has been irretrievably lost; responsibility to the community of scholars has been replaced by responsibility to the committee on extracurricular activities, to the department, to the college, and to the community at large. Though the banner of disinterested scholarship is unfurled on appropriate occasions, the allegiance enforced is to the so-called "needs" of the immediate community: great efforts are made to bring the lamp of knowledge to all men through evening and extension programs, television, publicity and "social service" bureaus, "vocational" colleges, and so on. More significant is the tacit acceptance of the principle that the success of the university — even of scholarship — is to be measured by the mass response to it and by its financial success.

Neither the naïveté of the above remarks nor the exaggeration of the contrast presented can be used to dismiss the problem. The university does not exist simply to administer to the expressed or implied needs of a particular society at a particular time. That it does so (and it of course does) is incidental to its purpose, which is to preserve, extend, and disseminate *lux et veritas* or, if you will, learning, virtue, and piety.

In the modern university, only one school can be expected to fulfill this purpose for which the university exists — the Graduate School. Its immediate "practical" aim — to provide the society with competent members of the learned professions — can be achieved only if it successfully functions as a community of disinterested scholars.* It cannot so function unless certain principles are clearly recognized and put into effect as guiding policies. They follow from the recognition of the Graduate School (and the ancillary College of Arts and Sciences) as the *sine qua non* of the university, and are here stated as criteria.

1. As sharp a division as possible must be made between undergraduate and graduate training. Though the purpose of both is best served by small

*Neither *community* nor *disinterested* is used in the current popular sense.

Copr. 1958, Trustees of Boston University

classes, seminars, tutorials, and conferences, graduate education hardly deserves the name if carried on in any other way. Such training is demanding and expensive; no graduate student should be admitted and no graduate degree offered unless the expenses involved can be met without compromising standards. The attempt to solve the problem by maintaining a graduate school which is graduate in name only is not a compromise but a rejection of the concept of graduate study.

2. Every university which maintains a graduate school must also maintain a library sufficient to meet the needs of the program that the school offers. It is useless to send students elsewhere for their basic materials; the university is itself responsible for the programs it institutes. An adequate budget for a large university library must run close to seven figures: the list of basic books, periodicals, microfilms, and services needed is perhaps as long as the roll of the elect, but a university with no intercollegiate athletic program, three or four small colleges and schools, and an adequate library, is far better able to meet the demands of education in the modern world than one with championship teams, twenty expanding colleges, and a library totally inadequate for the scholars it must try to serve.

3. The university must recognize that there is no conflict between quality and quantity: there is only quality. Graduate education is in itself an exacting pursuit for both teachers and students; those who are able and willing to meet its challenge should not be sacrificed unnecessarily upon its altar. The university must provide the graduate instructor with the time and money required for his task. Teaching and administrative loads are at present far too heavy, and salaries far too low. One often feels that only those who have themselves had to face the work of a scholar-teacher can understand that a maximum nine-hour load (including credit for committee and administrative work) and a *minimum* salary of some $8000 per year would barely enable them to perform the task which civilization, if not the university, demands of them. The society, through the university and public foundations, must meet the similar needs of the apprentice with adequate rather than token scholarships and fellowships.

4. The university must affirm a proposition that was once self-evident: there is no such abstraction as a good teacher who is not a productive scholar, nor a scholar who is not also a good teacher. No teacher is worthy the name who does not keep up with his field and contribute the results of his studies to it, nor any scholar worthy the name who cannot communicate his knowledge of and passion for his subject to those who will carry on his work. It follows that the graduate faculty must be given load credit and financial support for its research as well as for its teaching, and that faculty members who cannot then do their job well should be dismissed from it. It also follows that the graduate school must encourage and support the dissemination of research in the form of planned scholarly publication.

5. The rites and ceremonies properly belonging to the university must be made meaningful to its members and apparent to the public. Pomp and circumstance are considered unfashionable and undemocratic, but the human need for adequate symbols is as strong as it ever was: witness the wailing over lack of "school spirit," that vague and inadequate substitute for proper tradition and form. A graduate degree is an achievement — so is election to a scholarly or professional society, the attainment of an academic honor, the successful completion of an important book or article, and the attainment of academic rank; and these achievements deserve formal and ceremonious

[*Continued on p. 76*]

College Affiliation and Political Attitudes*

by

MURRAY B. LEVIN

Instructor in Political Science, College of Liberal Arts

and

PHILIP NOGEE

Associate Professor of Psychology, College of Liberal Arts

The number of young people attending American universities and colleges in recent years is rapidly increasing so that college-educated persons are forming a larger proportion of the voting public. Since college graduates also monopolize most of the policy-making positions in the Federal government, their influence extends far beyond the number of votes they cast. These facts have led to considerable speculation and study concerning the influence of a college education on the formation of political attitudes and opinions.

In the popular mind such speculation has often had a stereotypical form. Conservatives often see the university as a hot bed of radicalism inculcating extreme and often confused opinions, while radicals just as frequently complain that the American colleges merely reiterate and reinforce the traditional political attitudes of the past. Yet the large urban university today is not a homogeneous body; it consists of many and diverse schools and colleges each with its own intellectual tradition and professional orientation. These colleges might be expected to attract different types of young people from different political backgrounds and to influence them in different ways.

The present study was undertaken to gather data concerning the political attitudes of young college voters and to examine the role which particular schools within a university may play in shaping such attitudes.

Procedure

The subjects selected for this study were Boston University students, both graduate and undergraduate, who were eligible to vote in a presidential election for the first time in 1956. In order to secure such subjects the registrars of five colleges within the University were asked for lists of all students in their respective colleges who were between the ages of 21 and 25. These lists for each college were made up into separate rosters according to the religious preference indicated by the student on the chaplain's data card. For two of the colleges, Law and Theology, the registrar indicated that more than 90% of the students were between 21 and 25; for these colleges, therefore, the original lists contained the names of all students. Except for the School of Theology, whose student body was virtually 100% Protestant, rosters of students were stratified according to religious preference prior to being sampled. From these rosters, thus stratified by school and religion, a random selection of 1/7th of the names was made using a table of random numbers as a selection device.

Every student selected for the total sample (374) was sent a personal letter explaining the nature of the study and asking him to appear for an

*This study was made possible by a grant from the Boston University Citizenship Project, which is sponsored by the Falk Foundation. The authors wish to thank Drs. Nathan and Eleanor Maccoby for their kind assistance in the preparation of this article.

interview. The majority of subjects voluntarily responded to this request. In addition, interviewers were sent to the different colleges with the names of those selected from that college as subjects, and many were interviewed in this way. Finally, a number of interviewers made special trips to the homes of subjects who had not been reached by either of the previous methods, and secured the interview data by that means.

Despite all these efforts not every one desired for the sample was interviewed. Thirteen of the potential subjects were ineligible for the study, either because they were over 25 and had already voted in a presidential election or because they lacked United States citizenship, thus reducing the sample to be interviewed to 361. Of these, 45 potential subjects could not be reached for interview or refused to be interviewed. However, complete information was secured from 314 subjects from the different colleges, and these subjects formed the sample for this study. Thus approximately 87% of those eligible in the sample were interviewed.

Tables I and II show the relation between the number and proportion of students in each college in this population, as defined previously, and in the sample; and the number and proportion for each religious preference in the population and sample.

Table I

The Number and Proportion of Eligible First Voters in the Five Colleges for Both Population and Sample

	Population		*Sample*	
College	*Number*	*Proportion*	*Number*	*Proportion*
College of Liberal Arts	708	28%	90	29%
College of Business Administration	485	19	60	19
School of Education	339	14	44	14
School of Theology	379	15	44	14
School of Law	614	24	76	24
	2525	100%	314	100%

Table II

The Number and Proportion of Eligible First Voters by Religious Affiliations for Both Population and Sample

	Population		*Sample*	
Religious affiliation	*Number*	*Proportion*	*Number*	*Proportion*
Protestant	1198	47%	118	38%
Roman Catholic	810	32	101	32
Jewish	473	19	74	24
Other	44	2	21	6
	2525	100%	314	100%

Results

Table III below shows the proportion of eligible voters among the students in each college who voted, and the distribution of these votes between candidates.

Table III

Presidential Vote by College

Voted for:	*C.L.A.*	*Education*	*Law*	*Theology*	*Business*	*Total*
Eisenhower	47%	64%	61%	53%	70%	50%
Stevenson	53	36	39	47	30	41
	100% (N=64)	100% (N=36)	100% (N=62)	100% (N=34)	100% (N=54)	100% (N=250)

Total Voted	71%	82%	82%	77%	90%	80%
Did Not Vote	29	18	18	23	10	20
	100% (N=90)	100% (N=44)	100% (N=76)	100% (N=60)	100% (N=60)	100% (N=314)

An examination of this table reveals several interesting points. The most obvious of these is the fact that Eisenhower won a sweeping victory among those voting in four of the five schools, and therefore in the sample as a whole. Indeed, in three of the five schools he received a much greater proportion of the votes cast than he did in the country as a whole. The only school to support Stevenson was the College of Liberal Arts, which also had the smallest turnout for voting. No student interviewed admitted voting for the candidate of a minor party, although these candidates received approximately 1% of the national vote.

These facts should certainly allay the fears of those who see the university as a center for political extremism. At the same time the size of the turnout for voting refutes the notion that students are apathetic or indifferent about political affairs. It has been estimated by Dr. George Gallup[1] that less than 60% of those eligible to vote in this election actually did so. This proportion is greatly exceeded in every one of the five schools studied.

Although these figures might indicate a strong Republican trend within the University, a different picture is revealed by an examination of the data on party preferences. Table IV shows the preferences indicated by students within each school.

Table IV

Proportion of Students in Each School Preferring Each Party

Preferred Party	*C.L.A.*	*Education*	*Law*	*Theology*	*Business*	*Total*
Republican	27%	41%	41%	32%	50%	38%
Democratic	57	36	40	43	38	44
Socialist	1	0	0	2	0	*
Independent	14	18	18	18	10	16
No Answer	0	5	1	5	2	2
	100% (N=90)	100% (N=44)	100% (N=76)	100% (N=44)	100% (N=60)	100% (N=314)

*Less than 1%.

The generalization, frequently reiterated by political analysts, that Eisenhower was more popular than his party, is clearly true, not only for the sample as a whole, but also for each separate college. Despite the preponderance of votes for the Republican candidate, C.B.A. is the only college showing a definite preference for the Republican party. Even more striking, however, is the overwhelming preference for the Democratic party among the eligible voters in the College of Liberal Arts.

In most of the schools, nevertheless, neither party is preferred by a majority. Therefore, in these schools and in the sample as a whole, those young voters who consider themselves as "Independents" form a very significant bloc. Since party preference may be considered a more significant indicator of long-run political behavior than the vote cast in one particular presidential election, these data vitiate the idea of trend toward either party.

The importance of the so-called independents and the unwillingness of most students to commit themselves completely to either party is further indicated by a breakdown of the vote for congressional and state offices which is summarized in Table V.

Table V

Summary Vote for Congressional and State Offices

	C.L.A.	*Education*	*Law*	*Theology*	*Business*	*Total*
Straight Democratic	31%	20%	20%	9%	25%	23%
Straight Republican	8	20	16	25	25	17
Mixed	32	37	32	39	32	33
No Votes	29	23	32	27	18	27
	100% (N=90)	100% (N=44)	100% (N=76)	100% (N=44)	100% (N=60)	100% (N=314)

In every school the highest proportion of those voting split their tickets between candidates of both parties. In this respect the students do not differ markedly from the national electorate, about 40% of which split their tickets in the congressional and state elections.[2] The College of Liberal Arts is the only school in which the proportion and direction of those voting a straight party ticket is consistent with statements about party preference. The other schools show marked reversals (for example, the School of Theology) or no correlation between party preferences and voting for state and local offices.

In an effort to determine some aspects of their political ideology, the subjects were asked their opinions about three issues which have traditionally distinguished the major parties. The questions asked were:

1. We're wondering how you feel about some of the issues of the day: for instance, in strikes and disputes between working people and employers, do you usually side with the workers or with the employers? (If it depends on dispute.) Well, in most cases?
2. Do you believe the big dams and power plants should be owned and run by the government or by private industry?
3. Some people think that the government should make sure that each person has a steady job and a good income. Other people think it's more important for everybody to have a chance to get ahead on his own. How do you feel about this?

Tables VI, VII and VIII summarize the responses to these questions by school.

Table VI

Proportion Favoring Workers or Employers in Strikes

	C.L.A.	*Education*	*Law*	*Theology*	*Business*	*Total*
Workers	58%	43%	25%	43%	17%	38%
Undecided; see points on both sides	28	25	33	38	30	30
Employers	13	30	38	14	45	28
Don't Know	1	2	4	5	8	4
	100% (N=90)	100% (N=44)	100% (N=76)	100% (N=44)	100% (N=60)	100% (N=314)

Table VII

Proportion Favoring Government or Private Ownership of Major Power Resources

	C.L.A.	*Education*	*Law*	*Theology*	*Business*	*Total*
Government	50%	52%	34%	52%	35%	44%
Undecided: see points on both sides	10	9	12	16	12	11
Private Industry	31	34	37	27	45	35
Don't Know	9	5	17	5	8	10
	100% (N=90)	100% (N=44)	100% (N=76)	100% (N=44)	100% (N=60)	100% (N=314)

Table VIII

Proportion Favoring and Opposing Government Employment Guarantees

	C.L.A.	*Education*	*Law*	*Theology*	*Business*	*Total*
Security	19%	16%	15%	37%	12%	18%
Undecided; see points on both sides	14	16	13	20	16	16
Individual Initiative	67	68	72	41	70	65
Don't Know	0	0	0	2	2	1
	100% (N=90)	100% (N=44)	100% (N=76)	100% (N=44)	100% (N=60)	100% (N=314)

It is clear that the question on government employment guarantees does not discriminate between the students very well, since the great majority of the subjects are in favor of individual initiative. The School of Theology is the only one in which a significantly large number favor government guarantees of job security.

On the other two issues the division of opinion within each school seems to conform to the breakdown in terms of party preference. This correlation between ideological viewpoint and party preference is strongest in the College of Liberal Arts and in the College of Business Administration, the two schools which hold the most divergent political views. The majority of the students in the College of Liberal Arts not only prefer the Democratic party, but also the ideology traditionally associated with it, while those in the College of Business Administration even more strongly favor the Republican party and its traditional position. In general, the students in the Schools of Law and Education side with the College of Business Administration and lean toward the Republicans, while those in the School of Theology are more often on the same side as the College of Liberal Arts, and favor the Democrats.

The students in the School of Theology, however, more often hold independent views. This was evident not only on the question concerning job security, but even more strikingly on a question concerned with banning H-Bomb tests. The Theologians were the only students who strongly favored Stevenson's views on this issue, while the students in all other schools overwhelmingly favored Eisenhower's views.

Although students who have different party preferences often affirm mutually contradictory political ideologies, this relationship need not necessarily be a causal one. Instead, it may result from the need of the more highly educated voter to rationalize his political preferences. The latter hypothesis seems more reasonable in light of the answers to another question concerned with the reasons for preferring a particular candidate. Each subject was asked what he liked best about both candidates. Most respondents gave several answers and these were coded into two categories: personality characteristics and position on issues. The overwhelming majority of the responses were concerned with the personality of the candidate. Thus, of three hundred and sixteen reasons given for liking Stevenson, more than 83% were concerned with his personality and less than 17% with his stand on issues. On the three hundred and seventy-six comments given for liking Eisenhower, approximately 88% were concerned with his personality. Sincerity was the trait which the great bulk of subjects seemed to associate with Eisenhower. Despite the professed ideological differences voiced by those with different party preferences, the majority of subjects apparently preferred a candidate because of perceived personality traits.

The marked differences in the political attitudes of students in different schools within the same university raises a question about the source of this

differentiation. There are two possible hypotheses with respect to this question. One is that the different educational objectives and the intellectual content of the curriculum at each school may create a climate of opinion favorable to a particular political orientation which strongly influences the students. The other is that students with preformed political attitudes may be attracted to different academic disciplines. The first hypothesis emphasizes the role of the school in molding political attitudes; the other emphasizes the family environment.

To determine which of these hypotheses was more valid for this sample, data were collected about the relationship of the student's political attitudes and those of his parents. Each student was asked not only for his party preference and presidential vote, but also for those of both parents. It is important to note that the parents were not interviewed, so that all data concerning the relationship of parent and child in political attitudes are reported in terms of the child's conception of his parents' political position.

Tables IX and X show the proportion of young college voters in the whole sample who agree and disagree with their conceptions of their parents' party preferences and presidential votes.

Table IX

Relationship Between Party Preference of Young Voter and that of His Parents

	Fathers		
First Voters	*Republican*	*Democrat*	*Independent*
Republican	69%	11%	45%
Democrat	19	71	33
Independent	11	18	22
Socialist	1	0	0
	100%	100%	100%
	(N=112)	(N=115)	(N=27)
	Mothers		
First Voters	*Republican*	*Democrat*	*Independent*
Republican	74%	12%	37%
Democrat	16	71	47
Independent	10	16	13
Socialist	0	1	3
	100%	100%	100%
	(N=116)	(N=130)	(N=30)

Table X

Relationship Between Presidential Vote of Young Voter and that of His Parents

	Fathers		
First Voters	*Eisenhower*	*Stevenson*	*No Vote*
Eisenhower	61%	20%	47%
Stevenson	19	63	29
No Vote	20	17	24
	100%	100%	100%
	(N=150)	(N=76)	(N=88)
	Mothers		
First Voters	*Eisenhower*	*Stevenson*	*No Vote*
Eisenhower	59%	25%	40%
Stevenson	19	61	35
No Vote	22	14	25
	100%	100%	100%
	(N=174)	(N=80)	(N=60)

Table IX shows that those first voters who know the party preferences of their parents tend strongly to agree with it. 70.6% of these prefer the same party as their father, and 72.5% prefer the same party as their mother. These figures refer only to those whose party preferences are Democratic or Republican but not to those who state that their, or their parents' preference, is Independent. The status of this group, i.e., the Independents, is not clear, since there is neither party nor candidate to which it might refer. Furthermore, it is not always clear from the answers of the subjects whether a self-declared position as an Independent means indifference to both parties; or an eclectic selection of views from the ideologies of both parties, or some completely new position. When both parents have the same party preference, 74.4% of their children agree with this choice, 10% choose the opposite party, and 15.6% are independent or indifferent. Furthermore, these figures concerning parent-child agreement are strikingly similar to those found by Dr. Maccoby in her study of 1952 first voters, the great majority of whom were not college graduates.[3]

Of those who stated how their parents voted, 61% voted for the same candidate as father and 15% voted for the other candidate, while 60% voted for the same candidate as mother and 21% for the other candidate. The amount of agreement with respect to presidential vote, although substantial, is less than that for party preference. This, however, is due to the fact that some of these subjects could not vote because of residence requirements. If the statements of these non-voters are taken into account the agreement between child and parent is increased.

Agreement between both parents seems to be very important in determining the child's vote. In the 180 cases where both parents voted for the same candidate, 65% of the first voters made the same choice, while only 17% disagreed. In the 79 cases where only one parent voted and the other did not, 56% of the first voters followed suit but 40% voted for the other candidate. When the parents disagreed on presidential vote or when both were indifferent (55 cases) the first voters distributed their ballots equally between the two candidates, or did not vote.

The extremely high correlations between parent and child in both party preference and voting emphasize the importance of the family environment as the primary determinant of political attitudes. These data support the hypothesis that the political differences between students in the various schools arise from differential selection. The effect of the particular school is to reinforce preëxisting political attitudes.

Summary and Conclusions

A random sample of 314 students, eligible to vote for the first time in the 1956 presidential election, was selected from five schools within the University. These students were interviewed about their general political attitudes and voting behavior in this election. The following conclusions are supported by an analysis of the interview data.

1. There are marked differences in political preference and ideology between students in different schools within the University. Business and Liberal Arts students are at opposite ends of the political spectrum, with the former strongly supporting the Republican Party and its candidate, and the latter the Democratic Party and its candidate. Law and Education students tend to support the same views as those in the College of Business Administration. Although Theology students generally prefer the Democratic party, they are more often independent in their stand on particular issues.

2. There are no signs of political extremism in the entire sample. No student admitted voting for a minor party candidate, nor was their support for extreme ideological views.

3. However, the student voter is not apathetic or indifferent to political politics. A greater proportion of young college students voted than did among the electorate as a whole. Also, a significantly large number not only prefer a specific party but also hold ideological views consistent with the party preference. These young voters thus see themselves as ideologically distinct from the partisans of the opposition party. Despite this, the basis for voting seems to be very often the personality of the candidate rather than his stand on issues.

4. For most of the sample there is a very high correlation between the student's political attitudes and those of his parents. This supports the hypothesis that the differences between schools in political viewpoint are due to the differential selection of persons with preformed attitudes. The role of the particular school is confined mostly to reinforcing these attitudes.

References

[1]Boston *Herald*, 1 July 1957.

[2]Angus Campbell and Warren Miller, "The Motivational Basis of Straight and Split Ticket Voting," *Am. Pol. Sci. Rev.*, LI (June 1957), 294.

[3]Eleanor Maccoby, Richard Matthews, and Anton Morton, "Youth and Political Change," *Public Opinion Quart.*, XVIII (Spring 1954), 27.

The Graduate School and the University Idea

[*Continued from p. 68*]

recognition. The European custom of having the students rise when the instructor enters the room is derided in America, but it is perhaps worth remembering that the students rise not to honor him but that of which he is the symbol. Respect for that which deserves respect smacks not at all of totalitarianism: the university which eschews or belittles the meaningful symbols of its status can hardly expect recognition for the values it falsifies.

The obvious objection to the above criteria (perhaps even to the statement of the aim of the university) is that they are not "practical." The objection is only superficially valid. Such a program can be put into effect by a university which recognizes the need and plans single-mindedly and intelligently to meet it — though only at the cost of sacrificing some of the prevailing American attitudes toward education. No good graduate school, of course, can be self-supporting; nor should it be: it is absurd to ask its members to pay for what they contribute to civilization in other coin than the inevitable blood, sweat, and tears. If the revenues required for adequate operation cannot be supplied from university and public sources, the graduate school must rigorously limit its size until the university and the public recognize its importance and provide accordingly. The society may demand teachers, doctors, and scientists; but it is the university, not the general public, which must preserve and exercise the right and obligation to determine the minimum criteria according to which the demand shall be supplied.

After all, the public is used to paying for value received, and also to having that value determined by a sanctioned minority. The university must believe in and demand respect for its worth if it is to fulfill its function in the modern world.

F. M. L.

The New Look in General Biology at Boston University: An Intercollegiate Approach

GEORGE P. FULTON

Professor of Biology and Department Chairman, College of Liberal Arts

and

WESLEY F. TIFFNEY

Professor of Biology and Chairman of Science Department, College of General Education

It may seem unusual to discuss within the covers of the GRADUATE JOURNAL our undergraduate course in General Biology, which is elected primarily by Boston University freshmen, who, for the most part, are not majoring in the field. However, future professional biologists must filter through such a course at the sub-graduate level, and the basic content and motivation may be decisive factors leading eventually toward a graduate program and career in biology or some other related field of science. Furthermore, General Biology may often be the only college science course with laboratory work in the entire academic spectrum of graduate students specializing in non-science fields. Consequently, this course, which is frequently taken merely to satisfy a science requirement, presents an excellent opportunity and challenge to the biologists to state the case for the sciences and to provide the basis for an understanding and appreciation of the principles of nature, an alertness in regard to conservation of natural resources, and a grasp of the fundamental aspects of health and medicine. Obviously, the success of the introductory course in biology is of vital concern to those involved in graduate and professional work in many fields.

In an effort to strengthen our academic program in biology, improve standards, introduce newer aspects, and prepare for larger enrollments, we have initiated an intercollege approach to the teaching of biology, which is somewhat unique at Boston University. Previous intercollegiate cooperation in course presentations has been mainly along the lines of the "service course approach," for example, English Composition, offered by the English Department of the College of Liberal Arts as a service function for the School of Education, or Biology for Graduate Nurses, offered by the Biology Department for the School of Nursing. Our approach in General Biology has been that of complete fusion of the resources and experience available from two pre-existing departments involved in the teaching of introductory biology at Boston University. Thus, the freshman biology course in the College of Liberal Arts and the first-year course in science at the College of General Education have been reorganized and combined with pooling of personnel, equipment, and facilities, including space. The botanical and zoological aspects of biology have been integrated in a year course with a passing grade in the first semester prerequisite for continuation of the course in the second semester. The identical course is offered in the Summer Term and in the Evening Division, and the same senior faculty members participate, except for adjustments related to leave and summer vacations.

The academic advantage of and opportunities provided by the intercollege combination are numerous. The Science Department at the College

of General Education has pioneered in the selection and scholarly presentation of biological facts within the framework of the general educational philosophy, and introduced the "discussion section" to science courses at Boston University. Dr. Wesley N. Tiffney, Chairman of the Science Department, is contributing his experience and that of his staff (Dr. Mary Hawthorne and Dr. Ernest Blaustein). The Biology Department at the College of Liberal Arts is providing the services of senior and junior staff members with great interest in the introductory course (Dr. George P. Fulton, Dr. Donald I. Patt, Dr. I. Alden Macchi and Dr. Stewart Duncan). The quality and number of the combined staff with varied backgrounds and the collective resources in equipment make possible a superior type of presentation which could not be achieved by either college operating independently.

The administrative advantages are equally attractive. Intercollegiate cooperation with centralization of laboratory and lecture facilities is efficient and economical from a long-range point of view. It makes possible organization of lower level with upper level courses, the efficient use of personnel, and provides sequential research opportunities. This is administratively desirable financially as well as academically. The most capable biologists cannot long remain content in departments with heavy teaching loads which preclude research and provide no opportunity for contact with graduate students or colleagues active in research. Even comparatively larger salaries will not be effective in retention of the services of progressive biologists under such conditions.

Furthermore, the coördination and pooling of efforts will effect economies in cost per student and at the same time permit the use of demonstrations, purchase of specialized equipment, and solicitation of an occasional visiting lecturer on a scale not otherwise possible. The erection of multiple laboratories with duplication and triplication of facilities is precluded by intercollegiate development, sharing of staff and equipment, and joint planning. The judicious and well-supervised use of personnel available from the Graduate School, such as research associates, teaching fellows, and graduate and undergraduate assistants, provides many man hours of inspired and competent laboratory instruction of great assistance to the students and of immense internship value to the instructor trainees, who gain thereby in valuable teaching experience.

Nature of the Course

Volumes have been written on the arguments for or against separate "general" as opposed to "pre-professional" introductory biology courses, on the approach to use (principles, survey, case history, traditional taxonomic), on the precise material to include and exclude, and on the relationship of college biology to that in secondary and elementary schools. We do not propose to discuss such issues in the present article, but refer the reader to the published literature, for example, Tiffney (1948), Creighton (1949), Behnke (1957), and Tippo (1957). The course is designed for undergraduates, principally freshmen, and no distinction is made between majors in biology and non-majors. The "pre-professional" aspects of biology are thus taught in subsequent courses. We are exploring the possibility of an advanced placement test which might help us to select able secondary school students with the "equivalent" of our introductory course for entrance with advanced standing.

We wish to avoid the pitfalls of semantics in attempting to characterize our completely revised course in General Biology. For this reason, we bypass

advisedly such terms as "principles course," "integrated program," "general educational approach," or "survey course." These are all more or less "loaded" expressions with variable connotations depending in part upon subjective experience of the reader. It is an amazing fact that such otherwise respectable words have acquired to a considerable extent an undesirable meaning and act as a "red flag" to conjure up suspicion in the minds of many scholars.

The method of presenting the subject matter and content of the course has been changed appreciably, but not the content *per se*. The traditional method of teaching zoological aspects of biology as a separate course in the first semester and botanical aspects in the second semester (a procedure which sometimes still persists under disguise in courses which have been relabeled "General Biology") has been replaced by a single course running throughout the entire year. This obviates repetition of numerous processes common to both disciplines: mitosis, elements of genetics, cell structure, host-parasite relationships, and others. The taxonomic categories consisting of the scientific names of phyla and major classes have been abandoned as convenient pegs on which to hang important biological facts. Thus, a pioneer example of the traditional taxonomic approach is *Synoptic Textbook of Zoology*, written by Dr. A. W. Weysse, formerly Chairman of the Department of Biology and Dean of the Graduate School of Boston University, and published by Macmillan in 1903. This excellent textbook was a forerunner of more recent types which are basically synoptic, such as Storer's *Zoology*. However, courses which are based on books such as these frequently over-emphasize the classical descriptive aspects of zoology or botany, and thus fail to satisfy the needs of students who are not majoring in the field, and to provide a sophisticated overview of the scope of the biological sciences for majors and non-majors alike.

The approach of the present course is physiological rather than taxonomic, since from this point of view we may observe the interaction of the fields of biology, physics, and chemistry. Moreover, since the department research is largely in the area of physiology we may capitalize on the immediate and locally interesting aspects of biology and bring our freshmen students into closer contact with our graduate program. The physiological treatment is comparative, leading eventually to man, and is strengthened by a blend of taxonomic, ecological, and evolutionary threads. The scientific names of the major phyla and systematic concepts are taught as a component early in the course and used thereafter as part of the vocabulary without undue emphasis. Major areas of biological knowledge are discussed, such as digestion, nervous and endocrine integration, heredity, ecology, and evolution. Although we shall undoubtedly write our own textbook, the third edition of *Biology* (written by Dr. Claude A. Villee of Harvard, and published by W. B. Saunders Company) fits the course reasonably well and covers both animal and plant biology from the physiological point of view.

The subject matter of the course is organized into seven units which are presented by a series of lecturers (seven at present) who cover the material related to their biological specialty. Continuity is insured by the fact that the majority of the lecturers attend all the lectures and that the course coördinator, Dr. Tiffney, conducts weekly conferences of all staff members involved in the course. The system of multiple lecturers, coupled with close coördination, makes for keen competition and thorough preparation. It also provides the mechanism for continuity at top level of performance when key personnel must be absent on leave or for professional reasons. In addition to the lec-

tures, weekly one-hour discussion sections are conducted by senior staff members for students in small groups, with question and answer exchange, and weekly two-hour laboratory periods for small groups are held with exercises on living animals and plants, emphasizing dynamic features.

Summary Outline of Course in General Biology (BI 101 and 102)

Unit	*Semester I*	*Lecture Hours*	*Lecturer*
1	*Introduction to Course*		
	Fields and Opportunities	1	Fulton
	History and Philosophy of Science	3½	Tiffney
2	*Diversity of Living Forms*		
	Taxonomy, Methodology	6	Tiffney
3	*Nature of Matter*	6	Blaustein
4	*Nature of Life*	6	Patt
5	*Problems of Life*		
	Food	6	Blaustein
	Transportation and Distribution	6	Fulton
	Respiration	3	Fulton
	Excretion	4½	Fulton
	Semester II		
	Integration, Coordination and Locomotion	6	Macchi
	Reproduction	9	Hawthorne
	Heredity	7½	Hawthorne
6	*Ecology*		
	Physical Environment	6	Duncan
	Biotic Environment	6	Blaustein
7	*Evolution*	6	Tiffney

Mechanics of the Course

The lectures are given in Hayden Hall on Tuesdays and Thursdays from two to three-thirty, and all students in the combined course (approximately 500) are accommodated simultaneously with ample room for several hundred more. A public address system is used and the lectures are recorded on tape for the students in the Hospitals and Tutorial Program and for future staff or student reference. Visual aids are used frequently in the form of lantern slides and motion picture films. The combined collection of slides, film strips, and models from the two colleges is impressive. Original films on capillary blood circulation prepared by Fulton and co-workers [see GRADUATE JOURNAL, V (1956), 59-60] are used as teaching aids when appropriate. For a blackboard substitute, we are using an overhead projector with accessories (Tecnifax*), which permits the lecturer to write and draw on a twelve-inch transparent celluloid tape, one hundred feet in length and revolvable by means of rollers. The speaker faces the audience at all times and writes in his customary style at desk height without turning his back to the class. The image is projected high over the speaker's shoulder onto a large screen. Full overhead lighting is used at all times and the lecture room is never darkened during projection. An opaque pencil or pens with translucent colored dyes are used. Erasure is accomplished easily or the "black-

*Procurable from the Tecnifax Corporation, Holyoke, Massachusetts.

board" work may be rolled off the light table temporarily and rolled back again for review at an appropriate moment. We regard this device, with the lay-over slide technique, as a major asset for effective teaching in small and especially in large classes where the "blackboard" can be seen with ease by a thousand or more in a large auditorium.

Lay-over slides composed of a series of hinged transparencies are being prepared for presentation of abstract or complicated subjects, projectable by the Tecnifax method. Each "leaflet" of the slide is flipped in place by the lecturer at the appropriate moment, thus superimposing increasingly complex material on simpler basic components. By means of the diazo dye process, colored transparencies of animal and plant subjects will be made for use with the Tecnifax projector. We plan to prepare a complete series of such slides for the course in General Biology, and we anticipate a demand for copies as the potential of the Tecnifax system becomes recognized at other universities.

The discussion section of the course provides a means for coördination of lectures and laboratory work. Weekly ten-minute quizzes are given at this time. Active student participation occurs in the discussion section, which presents an opportunity for two-way questioning, comparison of ideas among students, and amplification of the subject matter beyond the scope of the lecture, textbook, and laboratory. The faculty and students benefit mutually from the less formal exchange provided by the relatively small discussion sections.

The laboratory work has been completely reorganized to include a dynamic approach and extensive use of living animals and plants. Numerous demonstrations of the type infrequently available for introductory students are arranged in our course; for example, the circulation of blood in a mammal as seen at high magnification in the hamster cheek pouch. Unusually ambitious and functional experiments have been introduced to replace more conventional and descriptive exercises, which are so often dulled by the time-consuming requirement of elaborate drawings. The laboratory exercises are correlated with the lectures and the "busy-work" concept is avoided. One of the most successful innovations is the experiment in which students working in groups anesthetize frogs by injection of urethane with needle and syringe, spread the web between the toes over a hole in a cork slab, and study the blood flow under the microscope. For comparison, the students also observe blood flow in the tongue and especially in the lungs of the frog. The exercise is terminated by study of the beating heart *in situ* and after excision and placement in a watch glass containing fluid of the proper osmotic concentration and salt composition. Instructive and stimulating experiments are being written to correlate with the lecture material in the units on endocrine and nervous integration, reproduction, heredity, and ecology.

A stockpile of carefully-prepared examination questions is being accrued and evaluated by item analyses. Statistical studies are being initiated on performance as related to previous background in science. Follow-up data will be recorded and later collated with performance in General Biology on the part of majors and non-majors as well.

Future Developments

The introductory course is a major undertaking which must present the fundamental facts in an instructive and stimulating way for non-science students and potential biologists alike. We contend that this should be ac-

complished by the Department of Biology at the College of Liberal Arts and Graduate School, with an intercollegiate approach, and that the course in biology which we are now perfecting on a long-range basis should be the introductory course to the subject for all colleges of the University. In this way, the diversified assets of a large professional staff can be screened for selection of personnel with the qualities of interest, enthusiasm, and teaching ability best suited for presentation of this course. Furthermore, the physical facilities are superior with a central approach.

Although it is traditional to condemn the large class as being pedagogically undesirable, we do not know of direct scientific evidence for this almost universally prevalent opinion. On the contrary, we attend concerts, theater, opera, church, and motion pictures in large groups. If the acoustics and physical facilities are of high quality, each individual in the audience can become absorbed in the presentation in proportion to his interest and motivation. In view of the prospective increase in enrollments, experimentation is desirable in the teaching of science in large classes. We believe that we are finding at Boston University a successful formula: large lectures conducted by multiple lecturers (aided by new teaching devices such as the Tecnifax), discussion sections for small groups, and functional laboratory work with capable staff supervision and enthusiastic graduate students acquiring experience as teaching interns.

We foresee an important role for television as an inevitable development. We intend to use this medium for its educational potential in the teaching of General Biology as soon as possible. In this respect, several universities in other parts of the country have obtained "the jump" on us in spite of our new school of Public Relations and Communications. For example, the Biology Department at the University of Houston in Texas has been broadcasting its introductory course on open circuit television for several years with great success. This TV course, conducted by highly-respected experts, is equally popular with students and housewives. Initially, we plan to use the closed circuit arrangement for microscopy, in order to extend the view of living protozoans simultaneously to a large group. Also, we intend to project demonstrations which can be staged only in specific areas, such as the greenhouse and individual research laboratories. Eventually, we hope to present our General Biology course, and perhaps other courses, on open-circuit television, either with or without opportunities for academic credit.

Two areas, testing and textbook, need considerable future action. Our testing program is now organized to aid the course to achieve its objectives. Dr. Mary Hawthorne is in charge of this work. She assembles questions from the staff concerned with the program, edits these questions to produce a coherent examination, and submits the results to the staff for further editing. After the examination is administered the questions are subjected to item analysis, and edited for future use. We hope in time to work out correlations between course and student performance in areas other than science. Perhaps such a study may also be valuable to the Admissions Office.

We are using a text which fits the program reasonably well. However, we shall in time write our own book, since we have not yet found one which completely satisfies our needs. Such a book will be concerned with basic understanding of science, will make careful distinction between fact and theory, and will attempt to show the relationship between fields of science as well as between the sciences and the humanities and social sciences. This book will present unsolved problems to emphasize gaps in our knowledge

[*Continued on p. 96*]

Boston University Book Review

Fiction and the Unconscious. By Simon O. Lesser. Boston: Beacon Press, 1957. 322 pp., $5.00.

Reviewed by ROBERT H. SPROAT
Associate Professor of English, College of Liberal Arts

A distinguishing attribute of contemporary as opposed to classical criticism is the extent to which it reflects the impact of psychological research. The dominant influence has, of course, been Freud. Literary critics of the Freudian school have tended to march off in one of two directions — either they have presented a psychoanalysis of the author and/or of his literary protagonist, or they have centered on studies of reader psychology in an effort to determine the appeals of reading.

Mr. Simon Lesser falls into the latter group: it might be more apt to say that his painstaking and carefully documented *Fiction and the Unconscious* entitles him to march at or near the head of the throng. For Mr. Lesser has made a notable, and in this reviewer's opinion, quite successful effort to come to grips with some of the most difficult problems confronting his particular school of thought. He has tried to show not just why people read, but why they derive satisfaction from reading works of the highest literary merit, and how they derive satisfaction from form. He has thus gone far beyond the simple ideas of "literature as an escape mechanism" or "literature as a means of wish fulfillment," which are probably the most familiar contributions of the Freudian school of thought.

Starting with the question of the needs that impel us to read fiction, Mr. Lesser depicts the reader in familiar Freudian terms as a battleground of conflict among the ego, the superego, and the id. He reviews and stresses also the guilts and hostilities, the anxieties and repressions, familiar to every reader of Freud.

Turning next to the subject matter of fiction, Mr. Lesser tries to show how content-wise, the serious work of art evokes the deepest and most lasting reader satisfaction. Here, for example, he poses the classic questions, "How can tragedy please?" and (at least of equal interest to the Freudians) "Why do we turn away from works that stimulate or pander to our 'drives' toward violence and eroticism?" Lesser's answer seems to be, in essence, that only in "serious" art do we find the three-fold conflict (among the ego, id, and superego) fairly and honestly represented. Thus only in serious art can we see problems like our own being worked out by creatures at least as complex as ourselves.

Fiction mirrors the struggle among the forces of the psyche, "and between the pleasure principle and the reality principle — between our wishes and the forces, internal and external, opposed to their fulfillment." Only through reading can we safely, as it were, share in the crime and participate in the punishment, thus giving a vicarious satisfaction to all the conflicting needs of our natures. "The characterizations, the value systems of great literature, certainly of great narrative art, are all pervaded by what I like to think of as a sense of the opposite. The underlying attitude is one of poised and sustained ambivalence."

To demonstrate the satisfactions made available through content is undoubtedly easier than to show how the satisfactions can be reinforced

[*Continued on p. 85*]

The Naval War College Program of the Boston University Graduate School

ANDREW GYORGY
Professor of Government, College of Liberal Arts

The holiday season this year brought a colorful and unusual assortment of Christmas cards to several members of our Graduate School faculty. The cheerful greetings from abroad ranged from Naples to Okinawa, and at home from South Carolina to California. They came from the first eleven M.A. graduates of the Naval War College Program and from approximately twenty other officers now completing graduate requirements.

Initiated in the summer of 1956, this program has now successfully completed its first year and a half of operation: once on a temporary "crash" basis, it has become a permanent contribution to the life of both Boston University and the Naval War College of Newport, R. I. The initial M.A. degrees in Government, specifically in the field of International Relations, were awarded in August, 1957, and the second group of students embarked on their two-course-a-semester program in September, 1957.

In order to appreciate fully the importance of this program, a brief account of the War College is essential. Founded in 1884, it was established for advanced courses of "professional study" for naval officers, and became in effect the only postgraduate educational institution maintained by the United States Navy. As a recent official statement succinctly put it, the Naval War College "stands today at the apex of the Navy's system of higher education, preparing *senior officers* for future positions of great responsibility in the preservation of our national security."[1]

The year-long courses of the War College offer a stimulating and intensive combination of academic subjects and technical military information. Since there are significant differences in the concentration of materials and the overall emphasis of instruction, three separate courses had to be evaluated for graduate credit purposes. Eventually the second-year (or senior) Naval Warfare course was found to be that most directly relevant to postgraduate work in the traditional political science manner. Naval Warfare II, as the War College curriculum calls it, is based on an exceptionally valuable three-dimensional approach: it offers formal lectures by leading civilian and military authorities, informal talks by a distinguished group of resident civilian faculty members, and intensive seminar meetings organized for small groups of students. The officers assigned to this course are senior Navy captains and Marine Corps, Army, and Air Force colonels, who are forty to fifty years old and have had twenty to twenty-five years of active military service. Academically, this course provides an intensive study of the theory and practice of international relations, the nature of the nation-state system, and the different concepts of national strategy. Within its framework the students are also given an exacting review of the different regions of the world, thus including an essential element of geography in this survey of the "art and science of modern warfare," which is aptly described as "an extremely complex web of political, economic, social, and military factors."[2]

When Boston University was called upon to organize an extracurricular graduate program in Newport, the M.A. in International Relations was built around the professional features of this unique course in Naval Warfare.

At the initiative of the Department of Government, Dean Duncan E. Macdonald recommended to the Graduate Board — and subsequently to the full faculty of the Graduate School — that qualified graduates of the advanced Naval Warfare course receive a total of ten hours of academic credit toward the M.A. degree, seven in the broad field of International Relations and three in Political Geography. When, after a spirited discussion, the Graduate School faculty in September 1956 voted to accept this recommendation, eighteen students were already enrolled at the Naval War College, and the program suddenly crystallized.* [*Continued on next page*]

*It is important to note that only the advanced course was given a ten credit evaluation by the Graduate School. The junior course was felt to be the equivalent of three credits, while completion of the middle-level course was deemed to be worth four graduate credits.

Boston University Book Reviewed

[*Continued from p. 83*]

through literary form. According to Lesser, the objective of form in literature is "the communication of the expressive content in a way which provides a maximum amount of pleasure and minimizes guilt and anxiety." Form is able to achieve this aim because its basic quality is order and control. By its very nature form commits us to love, to order, and to all the values of life that the superego cherishes. Consequently, our response to form is a response to the superego; it is a recognition and acceptance of its demands. In accepting the demands of the superego we are relieving the tensions existing between it and the ego. This in itself creates a pleasurable condition.

This brief survey of *Fiction and the Unconscious* by no means does full justice to the richness of the work, but it does indicate something of its basic philosophy. Perhaps the most rewarding feature of the book — at least for many readers — will lie not so much in its central thesis as in the wealth of detailed argument marshalled in support of various subpoints. (There are several full-dress analyses of literary works, that of Hawthorne's "My Kinsman, Major Molineux" being of special merit. Other scattered insights into the works of Kafka, Chekhov, Dostoevsky, Melville, James, Hemingway and others show that Mr. Lesser is a more than usually sensitive reader of fiction.) Lesser appears thoroughly familiar with the work of his precursors in the field of psychoanalytic criticism. In the course of developing his own ideas, he draws copiously upon theirs, so that his work is, in effect, a useful compendium of earlier work in this field.

As for the weaknesses of the book, it might be well to pose the question of how far Freud's psychology will withstand the test of time, for though Lesser may not stand as long as Freud, he will certainly fall with him! More serious, I think, is the inability of this work to offer any help in resolving the most puzzling of all esthetic questions — by what touchstone, if any, may we distinguish between the great achievements in art and the second-rate work of serious intention? Although it may be possible for some to practice the willing suspension of disbelief and regard the psychoanalytic method as ancillary to the study of literary criticism, to the traditional literary critic and formalist esthetician, Mr. Lesser's book offers a maddening "reduction" of esthetic values.

The Naval War College Program

[*Continued from p. 85*]

Even in the earliest formative stages of the M.A. program two distinctive features had to be emphasized. The first was that these courses were designed primarily for the staff, and not for the students, of the Naval War College, while the second stressed that it was an extracurricular, after-hours type of program to be organically separated from the regular offerings of the Naval War College. Although in the first year's group there were seven advanced student officers, the Administration of the Naval War College felt that the students were assigned to the College for full-time studies, and should not undertake after-hours graduate instruction. Consequently, for the second year of the program the Naval War College restricted enrollment to members of the College staff and to qualified officers and civilian personnel of the Newport, R. I., Naval Base.

The significance of the second point is rather obvious. Boston University undertook the program originally at the request of the War College, but in full awareness of the fact that its graduate offerings were not intended either to interfere with or in any way duplicate the complex and high-level academic program of the College. Ours was to be a voluntary and purely extracurricular item in the daily life of the Navy's educational institution.

Within these important limitations the Department of Government has developed a curriculum which is the annual equivalent of twenty to twenty-four credit hours of graduate work. If these hours are added to the varying numbers of credits granted to staff members for successful completion of one of the several War College courses, it becomes theoretically possible to complete all requirements for the M.A. degree in one academic year and one summer session.*

Recently, however, we have begun to advise our Newport students to extend their M.A. program over a period of three or even four semesters. Thus a two-course-per-semester student schedule is likely to develop into a single-course schedule per term covering a more protracted period of graduate study.

The first full year of the program's operation has indicated that six major courses or seminars are academically the most useful graduate offerings. These are Major European Governments, Soviet Government and Politics, Seminar in International Organization and Law, Seminar in International Politics, Seminar in Political Geography, and a course on the Scope and Method of Political Science. Although experimental seminars in American Foreign Policy and in American Government and Politics have also been given, it is safe to consider the first six courses as a well-crystallized core for future graduate work at the War College. A program of this nature must, however, remain flexible and dynamic. The Department of Government is eager to broaden the scope of the project and to request the coöperation of other Social Science departments in its Newport M.A. program. In the mean-

*The average credit and graduate work distribution breaks down in the following manner:

For work at Naval War College	10 credits
For work offered by Boston University during regular semesters	14
For work taken during summer	6
Total for M.A. degree	30 credits

time, it is a pleasure to record the effective support of the Department of Geography, and the outstanding success of the Political Geography seminar first offered at the War College during the current academic year.

While enthusiasm and experimentation are significant ingredients of the learning process, they have to rest on firm budgetary foundations. Since the Navy, Army, Air Force, and Marine Corps have all designated our Newport courses as a "tuition aid program," the officers enrolled in it receive some official support from their military service in the form of payment of a portion of their tuition. Although not sizeable in financial terms ($7.50 per graduate credit towards a total of $25.00), this tuition aid helps to defray some of the educational costs and serves as an effective symbol of the interest and concern of the Defense Department. It certainly encourages the officer in his studies and in his persistent efforts to improve himself. A recent official statement notes that tuition aid is given "to help pay for courses on the graduate level in areas that are of interest to the U. S. Navy."[3]

It is important to stress that beginning with the academic year 1956-57, when the Boston University-Naval War College course was designated a "tuition aid" project, it joined a truly nationwide program in which about two hundred colleges and universities participated from forty-one of the forty-eight states. That same year "approximately *six thousand officers and enlisted personnel* . . . took such courses."[4] As a result of mid-1957 budget cuts a number of courses were abolished and several University programs lost their tuition-supported character. Nevertheless, belonging in one of the top-priority educational categories (along with mathematics, physics, and certain modern languages), the Naval War College program in Government-International Relations successfully weathered this particular storm, and tuition support was again awarded to the students for the current academic year. The systematic study of political science, it was stated, could be carefully integrated with the over-all "career planning" of the individual officer.

In terms of career expectations our Newport students fall into two groupings. The majority, already Navy captains or full colonels in the Army, Air Force, or Marine Corps, clearly anticipate the use of their newly gained knowledge — and of their hard-earned M.A. degrees — to better themselves in their military careers, specifically in their next assignment, which may be of crucial significance for their "selection" to the rank of admiral or promotion to that of general. Usually in their early forties, these officers can look forward to twelve to fifteen years of active service, interspersed with important and complex foreign tours of duty. To them an advanced degree in International Relations has immediate usefulness and relatively short-term professional relevance.

The minority group, in its mid-fifties, has already completed most of its military career and — generally with thirty years of active service — plans to retire to civilian life. To these officers, systematic study of political science, and the M.A. degree crowning their efforts, suggests primarily an open (perhaps only semi-open) door into the teaching profession, which promises useful and challenging years of further activity and community service. A distinguished officer in this category faces a vastly different problem from that of the professor emeritus. He is not sixty-six or sixty-seven years old, but merely fifty-three or fifty-four. Although at the end of one career, he is vigorous, youthful, and adaptable enough to get started on another, particularly if he is given the opportunity of a brief period of re-training and "reconversion."

While in our program the second group is small in size, its importance

should not be minimized for a nation which is faced with a critical teacher shortage and which can ill afford to lose the talents and valuable experience of people who have served their country with distinction.[5]

Although extracurricular, after-hours, and voluntary in character, the Boston University M.A. program is not a set of loosely organized or haphazardly conceived extension courses. Quite properly, it is both organized and supervised by the Graduate School, to which such degree-granting postgraduate programs belong. The Department of Government, which in turn is responsible for establishing the academic requirements for the M.A. degree, deciding the types of courses to be offered, and designating the teaching staff, is fully determined to maintain the same standards that prevail for its resident graduate students at Boston University. Consequently the M.A. comprehensive examinations have been administered most meticulously by four- or five-man interdepartmental committees, and in the few exceptional cases where the candidates elected to write a Master's thesis, the highest dissertation standards have been applied and enforced. In view of the high motivation of our Newport students and their enthusiastic reaction to this interesting academic venture, it has been a pleasant and not overly difficult task to reach an agreement on scholarly expectations and on standards of graduate performance.

To those of us privileged to participate in the Boston University-Naval War College program as members of the instructional staff, this has been a remarkably stimulating and rewarding experience. One of the principal sources of academic satisfaction has been the unique student-teacher relationship. Surrounded by mature men (often several years older than himself) of unusually high caliber and with an exceptional desire for learning, the Graduate School professor finds even the most routine class sessions lively and profitable. Seminars are high-level discussion groups, and lectures are avidly followed and eagerly questioned. In a group of eighteen officers there are bound to be experts on almost any geographic region of the world and specialists on numerous political problems of our society.

In order to develop the most effective type of extracurricular military-civilian program, it is imperative that it remain small in scope, highly selective in its approach to students and to courses offered, and that it be administered exclusively by a Graduate School. Both faculty and students must be flexible, and the curriculum diversified and subjected to continuous supervision and review. The handling of *undergraduate* programs would be impossible on this basis. Although it has been frequently suggested in Newport that Boston University assume responsibility for a broad curriculum leading to A.B. and B.S. degrees, the administration of such a program — involving perhaps seventy-five to a hundred military personnel in the process of completing their undergraduate education — would be overly complicated and burdensome on this pattern of direction by "remote control." The true challenge, we feel, is present only if a small and serious group combining widely divergent backgrounds[6] works together harmoniously for advanced graduate degrees.

Teaching under such circumstances becomes a particularly serious and formidable responsibility. In effect, it offers a direct pedagogic channel for influencing American foreign policy in key areas, on significant issues, by prominent men. Seldom is the subject of classroom lectures so speedily translated into actual practice or diplomatic action as in the case of an International Relations professor talking to a selected graduate-student group of high-ranking officers drawn from every branch of the military

services. Letters now reaching us from home and abroad clearly indicate the immediacy of this learning process and the challenging applicability of such knowledge imparted and eagerly received.[7] One of our M.A. graduates, an Army colonel at present stationed in Naples, comments on the day-by-day usefulness of his courses on European politics. Dealing with sensitive NATO problems in close coöperation with Italian, Greek, and Turkish officers and diplomats, and spending hours every day analyzing the political trends observable in the Italian press, the colonel is impressed by the practical value of the Boston University courses taken at Newport last year and by his improved expertness in international affairs.

Thus, instead of merely theorizing about the "training for foreign service," the War College M.A. program actually establishes a vital connection between the classroom and the reality of immediate practice.

References

[1]Vice-Admiral Lynde D. McCormick, *The United States Naval War College*, Information for Guest Lecturers (Newport, 1955), p. 2.

[2]L. D. McCormick, *The United States Naval War College*, p. 3, in an important summary statement entitled "Educational Philosophy" (pp. 3-4).

[3]"Tuition Aid," *Naval Training Bulletin*, Information and Education Issue, (Bureau of Naval Personnel, Washington, D. C., Autumn, 1957), pp. 9-10.

[4]"Tuition Aid," *Naval Training Bulletin*, (Autumn, 1957), p. 9 (italics mine). The programs described here have a truly global flavor. In the 1948-1952 period, when the tuition aid project was initiated, Tulane University operated a substantial Center at the Pensacola Naval Air Base in Florida. This Center was a branch of Tulane University and awarded regular residence credit at the base. In the more recent phase of the tuition program, revived in July 1956, some of the more colorful college programs were the University of Maryland's branch at Argentia, Newfoundland, and the Florida State University branch at Guantanamo, Cuba. In the United States, important graduate and undergraduate programs are operated by the University of Maryland (with an elaborate evening program at the Pentagon), Georgetown University, the University of Florida, and many others. The pace of these course-offerings is described as generally very rapid: three semester hour courses are often completed in eight weeks, with only a day or two between terms. Although the programs are designed for the military, the ones given abroad frequently include civilians, both dependents and civil service employees. In the Navy's official view these courses have been on the whole successful. One of the few difficulties cited is the fairly heavy incidence of student withdrawals before completion of the courses. The key question always seems to be: can military personnel do satisfactory work in advanced college courses? The conclusion reached in the article here speaks for itself: the tuition aid program "gives every indication of being a successful addition to the Navy's modern array of educational opportunities."

[5]A ready illustration is one of our successful M.A. graduates who retired in July 1957 with the rank of Rear Admiral, and now serves as administrator and faculty member of one of the military base extension centers of a major southern University. In this capacity, he was promptly called upon to teach two courses, one in International Relations and the other in Modern European History. Here his recent graduate training immediately stood him in good stead.

[6]The different backgrounds of our War College students are clearly indicated by certain preliminary statistics. In the first year's group of eighteen there were twelve Annapolis graduates and six from various civilian universities and colleges. Seventeen were in the military; one was a civilian. In the second year's first term, of eleven students (all in the military) two were from Annapolis and two from West Point, while the remainder again showed wide variations among different civilian universities. Four women students were admitted for the first time for the second semester of the current year: two Wave officers and two civilians working at the Naval War College. Civilian undergraduate institutions listed on applications for admission to graduate work range widely from the University of Utah to De Pauw and Tufts Universities.

[7]Two recent and highly pertinent illustrations should be cited here. Serving this year in England in a sensitive branch of his service, a senior Navy Captain writes: "This is a fine job, and I am most appreciative of the background from the Boston University course. I have been doing a lot of travelling with more to come — Paris, Brest, Oslo, and all over the United Kingdom."

[*Continued on p. 96*]

Slavic Languages and Literatures at Boston University

LEON I. TWAROG

Associate Professor of Slavic Languages and Literatures, College of Liberal Arts

The development of Slavic studies in the United States was extremely slow and laborious. The first college courses in Slavic languages and literatures were offered in the midwest — Czech at Oberlin in 1885, and Polish at St. Mary College, Orchard Lake, Michigan, in 1887. Russian was introduced at Harvard in 1896, at the University of California in 1901, and shortly thereafter at Yale, the University of Chicago, and the University of Michigan. However, even as late as 1935 only nineteen institutions offered courses in Russian language or literature, and there were only six Slavic departments in all the colleges in the United States. By 1939, Harvard, Columbia, and California had become established as the "big three" of Slavic scholarship and teaching, but the total number of Ph.D.'s granted in Slavic languages and literatures to that time numbered less than twenty.

World War II spurred the development of Slavic studies. The most striking advances came in the humanities, which had developed much more slowly than the social sciences. At Boston University, for example, courses in the history of Russia, and in the Near East (which included a survey of the history of Turkey, the Balkans, and Poland), had been offered regularly since 1924-25, and had been supplemented by a seminar in Slavic history from 1931-32. The first course in Russian at Boston University was introduced in the Extension Division in 1943-44, and the following year offerings in Elementary and Intermediate Russian were included in the horarium for the College of Liberal Arts. By 1949-1950, course offerings had been expanded to include three years of Russian, and a second year of Polish. A single semester course of Russian literature in English translation was offered in 1950-51, the year which marked a high point in registrations, and in the following year a separate course in Polish history was offered for the first time. A new field of concentration in Slavic History and Literature came into effect in 1952-53.

However, by that time, under the impact of Macarthyism, language enrollment had begun to drop off, reaching a low point in the year 1953-54 with a total registration in the College of Liberal Arts of fifteen in Elementary Russian, four in Intermediate Russian, and two in a Russian literature course in English translation. The following year language enrollments more than doubled, and a new course, Literature of the Slavic Peoples in English Translation, was added to the curriculum. In this course, a pioneering venture in Slavic studies in this country, an attempt was made to acquaint the undergraduate student with the most significant works of Slavic authors other than Russian, something that had been almost completely neglected in this country even on the graduate level. This course, now one of our basic offerings, has served as a model to other colleges.

The gradual introduction of additional one-semester courses in Russian literature in translation, such as the Modern Russian Short Story, Modern Russian Drama, Russian Literature Since 1917, and Dostoevsky and Tolstoy, offered every second year on a rotating basis, and the enthusiastic reception

accorded these courses, soon made possible a concentration in Slavic languages and literatures on the undergraduate level. The faculty of the College of Liberal Arts approved such a program, and it went into effect as of 1956-57 with approximately fourteen concentrators enrolled. Year courses in Russian literature and Slavic literature, at least one semester of Russian or Polish history, and three years of one Slavic language are required under the program. The student must then elect at a minimum, either a second Slavic language or additional literature courses to fulfill principal course requirements. In 1957-58 freshmen and sophomores enrolled in the Elementary Russian course were also given the opportunity of developing their spoken language by enrolling in a special drill section handled by a native speaker. Eventually similar courses on the intermediate and advanced level may also be available. Although there have not, as yet, been any concentrators specializing in Polish rather than Russian, provision has been made to take care of these students should the need arise.

Today, the College of Liberal Arts at Boston University is one of forty-five institutions in the United States, and one of six in New England, with an undergraduate major in some aspect of Slavic languages and literatures. Others in the New England area are Brown University, Dartmouth College, Smith College, Middlebury College, and Harvard College. Several colleges in the Greater Boston area offer Russian language instruction, but only Harvard and Boston University offer literature courses in addition. While there is no formal area studies program at Boston University, Slavic concentrators may elect as related subjects pertinent courses in history, government, geography, and economics.

The growth and development of Slavic studies at the College of Liberal Arts has been accompanied by a similar development in the Evening Division, which has been offering Russian language instruction since 1952, and literature courses in translation since 1954. Boston University is the only institution in the Boston area offering academic credit for Russian literature courses taken in the evening, and the only school regularly offering Russian language courses on the second- or third-year level in addition to Elementary Russian. The present course in Scientific Russian, offered at the second-year level, is the only formal scientific Russian course given at a college or university in the Boston area which is open to undergraduates for academic credit. M.I.T. offers a special one-semester course in scientific Russian at the elementary level each year, but this is open only to graduate students. At present, Boston University is one of twenty-two institutions in the U.S.A. and Canada with offerings in scientific Russian.

In the current academic year, a one-semester course on Dostoevsky was offered in the fall semester, and this is to be followed by a Tolstoy course in the spring. It is planned to alternate these two courses with a Turgenev-Chekhov sequence in 1958-59. These literature courses offered in the Evening Division not only serve to acquaint the general public with outstanding Russian writers, but effectively expand and complement courses regularly offered in the College of Liberal Arts, and give undergraduates and graduate students opportunity for more intensive study of world-renowned authors to whom only a few hours can be allotted in the survey course in Russian literature.

One of the basic deterrents to the development of Slavic studies on the college level has been the lack of language training in Russian at the secondary school level. Some universities even give graduate credit for Elementary Russian since not all colleges and universities offer the language.

At last count approximately one hundred seventy-five colleges and universities have courses in Russian, and the majority of these offer three years of Russian and additional material in literature, history, or culture. To give students who have started late an opportunity to catch up, an intensive course in Elementary Russian meeting three hours daily for a period of six weeks in the first session of the Summer Term was offered in 1956 and 1957. The following September these students were qualified to enroll in the second-year course at the College of Liberal Arts, or in the scientific Russian course in the Evening Division. The response to the intensive course has been most gratifying, and reflects the developing interest in Russian studies. Total enrollments in language and literature courses in the College of Liberal Arts and in the Evening Division have increased steadily from a low of thirty-six enrolled in four courses in 1953-54, to a high of one hundred forty-six enrolled in ten courses in 1957-58.

At the present time, no graduate degree is offered in Slavic languages and literatures, although the third year Russian language course and all literature courses carry graduate credit if approved by the major professor in another department. When there is sufficient enrollment at the lower levels to warrant the addition of more advanced language and literature courses, so that a graduate student may complete course requirements for an advanced degree in one year, such a program will be feasible. It seems highly unlikely, however, that in the very near future a Ph.D. program in Slavic studies will be instituted at Boston University. One of the major obstacles to such a program is the inadequacy of library holdings in Slavic studies for use at that level, not only at Boston University, but throughout the country. Of the twenty universities in the U.S.A. and Canada which offer graduate work in Slavic, only fifteen award the Ph.D. degree, and these include some of the oldest and richest state and private institutions.

A much more realistic goal would be the strengthening of the undergraduate major to ensure adequate preparation for graduate work in the field, for positions in government and industry, and eventual teaching positions in our secondary schools. The launching of the Russian "sputniks" has, of course, brought into sharper focus our own inadequate language training at both the secondary school and the university levels. It has been estimated that only five thousand students are regularly enrolled in Russian language courses in colleges, whereas forty percent of all students in Soviet secondary schools, and 65 percent of university students, are studying English. At present only fifteen private and public secondary schools in the United States offer Russian language instruction. There are strong indications that within the next two years many more secondary schools, both public and private, will introduce Russian if suitable teachers can be found. The supply of such teachers is extremely limited at present. Boston University can do its part in making available graduates competent in language, literature, and culture, who may then wish to pioneer in this very new and important field.

In many ways it is unfortunate that the study of Slavic languages and literatures is so often tied to immediate, practical aims. While pointing out the specific vocational opportunities that exist, and welcoming the growth of interest in things Slavic, it should be the aim of the department on the undergraduate level to develop interest in the field on the basis of enduring scholarly and cultural values without the absolute expectation of immediate vocational application.

A New Experimental Site for the Extrauterine Study of Mammalian Development*

THOMAS E. SMITH, JR.

Ph.D. candidate in the Department of Biology, Graduate School

The mammalian ovum, although first discovered by Von Baer in 1827, remained for many years a difficult object to study experimentally because of its small size and delicacy when compared with the ova of other vertebrates such as the chick and frog. The relative inaccessibility of the embryo in the uterus and the early establishment of the compound maternal-fetal organ for early nourishment (the placenta) together presented formidable barriers to the experimental embryologist. It is of interest to note, that while the modern history of experimental embryology may be considered to have begun in the closing decades of the 19th century, it was not until 1913 with the work of Brachet[1] that the mammalian egg was grown outside of the uterus. Brachet made use of the newly-developed "tissue culture" technique to do this. In subsequent years mammalian embryonal material has been experimentally transplanted (*explanted* is the term most commonly employed by experimental embryologists) to the fetal membranes of the chick,[2] to the anterior chamber of the eye[3] (that is, the space between the transparent cornea and the iris), the posterior chamber of the eye,[4] and to the body spaces of the chick embryo,[5] after the technique first developed by Hamburger (1933).[6] Nicholas of the Osborn Zoological Laboratory at Yale has transferred mammalian embryonal material both before and after its establishment in the uterus to a number of experimental sites in the mammalian body, including the thin sheets of tissue called mesenteries which support the visceral organs, and the abdominal cavity. He found that the capsule of supporting tissue surrounding the kidney was the best of all the experimental sites he used.[7]

All of the techniques mentioned above have had several inherent disadvantages. The tissue-culture techniques only approximate the conditions which the embryo has surrounding it in the uterus. Further, replenishment of the tissue-culture medium and removal of products of the embryonic material's life processes, as well as the necessity for the observance of the strictest sort of antiseptic technique, impose drastic limitations on the extent to which this technique may be employed by the experimental biologist. The membranes and body spaces of the developing chick have as a common limiting factor the foreignness of the host. Thus, tnough the several studies of experimental mammalian sites employed by previous workers have cast much light on the elucidation of problems of causation in the developmental mechanics of the mammalian embryos, the sites used are either difficult to approach surgically or difficult to observe *in situ*. A possible exception to this is the anterior chamber of the eye.

In the summer of 1954 Dr. Donald I. Patt of the Graduate School faculty suggested to the author that the membranous cheek pouch of the hamster (*Mesocricetus auratus*) might be suitable as an experimental tool for the study

*The author wishes to thank Dr. Donald I. Patt, Associate Professor of Biology at Boston University, for his assistance in the direction of the research. The work was assisted by a grant from the National Cancer Institute of the United States Public Health Service.

of the extrauterine development of the very early hamster embryo. The work of Dr. Brenton R. Lutz, Dr. George P. Fulton, Dr. Patt, and others, has shown that the cheek pouch was a veritable "living window" through which may be viewed such biological phenomena as the development of tumors, the formation of both red and white blood clots, the establishment of parasites both multicellular (the work of Dr. Arthur Humes) and microbial (Dr. Genevieve Young).

Accordingly, in the fall of 1954 I commenced the exploratory work. Like others before me I found the mere recovery of mammalian eggs and of the embryo in very early stages of development prior to establishment in the uterus difficult to accomplish. Once having acquired the technical skill to recover the material, I found that hamster embryos would not establish themselves in the cheek pouch if they were transplanted before they had become implanted *in utero*. Whether this was due to the intrinsic incapability of the cheek pouch to support extrauterine growth at this stage, or to failure of the embryonal material to stay in place long enough for development to go forward, remains at the time of writing unknown.

Dr. Patt and I then decided to explant the embryo at a later stage of its development, after it had established itself in the uterus. Results were quickly forthcoming. It was found that the uterine lining (which had been transferred along with the embryonic material) grew and proliferated in a way which histological examination showed to be virtually the same as that of the uterine lining in its original location. Though this fact was interesting and had profound implications, we felt that it would be more informative to study the material of the embryo itself.

We found that a variety of embryonic tissues (brain, skin, intestine, bone, and muscle, to name but a few) would grow in their new surroundings. We elected to concentrate upon the very early forelimb of the embryo, since this particular complex of tissues is readily identified and excised, and because so much work had been and was being done on the problems of limb development in vertebrates. The results were gratifying. Limbs grew in the hamster's cheek pouch in a way which very closely approximated their normal growth in the intact embryo.

Once the fact was established that growth and differentiation would proceed in the pouch, the next step was to modify this growth experimentally. The work of Saunders (1948)[8] and Zwilling[9] had shown that in the chick the development of the limb is a phenomenon dependent on the dynamic interaction of the two major components of the limb in its early embryonal condition: the primitive skin or ectoderm overlying it, and its core, composed of primitive sort of connective tissue called mesoderm. These workers had shown that there exists an interdependence between these two components in the development of the limb, and that separation of them at certain stages causes a failure of the limb to develop normally. Our work has shown that, apparently, similar effects may be produced in the transplanted hamster limb.

Our technique as it has come to be developed may be briefly outlined as follows:

1. Embryos are recovered from pregnant female hamsters and are dissected free of the uterine tissues and the placenta.

2. The very early fore limb is dissected free of the embryo in the field of a binocular dissecting microscope. This is done while the embryonic material is kept warm and moist with solutions approximating in constitution the body fluids of the mother.

3. The cheek pouch of the mother — a blind sac attached to the oral cavity, and extending into the shoulder — is pulled out much as one turns the finger of a glove inside out, spread over a quartz block in a special preparation dish, and transilluminated. A small incision is made in the uppermost surface of the pouch in an area relatively free of blood vessels. A small channel is then cleared in the space between the two layers and the embryonal material is transferred.

4. After a week has passed, and as often as desired thereafter, the transplanted material is observed in the pouch.

5. When it is desired to recover the material, the pouch with the contained transplant is excised and histologically analyzed.

This technique, developed here at Boston University by Dr. Patt and myself, has several advantages which techniques previously employed in experimental work on the mammalian embryo did not have: In the first place, the embryonal material in the cheek pouch may be observed frequently over a relatively extended period of time with minimal traumatic injury to the animal. Also, a high degree of normalcy is maintained by the material in the experimental site, since it is *in vivo* tissue culture.

On the other hand, the use of the cheek pouch has several disadvantages. In the first place, only the approximate state and condition of the tissue may be determined while it is in the pouch. Secondly, complete evaluation of results must wait upon detailed histological analysis, a time-consuming process.

The significance of this work is that a new and apparently quite useful location for the experimental study of mammalian embryos has been developed. We hope that other embryologists will become interested in the studies of this new site now being carried on at Boston University.

References

[1]Brachet, A. "Recherches sur le déterminisme heréditaire de l'oeuf des mammifères: dévelloppement in vitro de jeunes vesicules blastodermiques de Lapin," *Archives de biologie*, XXVIII (1913), 447-503. *An earlier article was published in 1912.*

[2]Hiraiwa Yoshe Kuni. "Studies on Grafts of Embryonic Tissues of the Rat on the Chorio-allantoic Membrane of the Chick," *Journal of Experimental Zoology*, XLIX, No. 2 (1927), 441-457.

[3]Fawcett and Wislocki. "Development of Mouse Ova in the Anterior Chamber of the Eye and in the Abdominal Cavity," *American Journal of Anatomy*, LXXXI (1947), 413-443.

[4]Shapiro, H. "Ocular Implantation of the Mammalian Ovum," *Proceedings of the American Philosophical Society*, CII, No. 2 (1957), 164-176.

[5]Gluecksohn-Schoonheimer, S. "The Development of Normal and Homozygous Brachy (T/T) Mouse Embryos in the Extraembryonic Coelom of the Chick," *Proceedings of the National Academy of Science U.S.A.*, XXX, No. 6 (1944), 134-140.

[6]Hamburgur, V. "A Method of Transplanting Limb Buds in Chick Embryos," *Anatomical Record*, LV (1933), 58. See also "Développement in vitro de blastodermes et de jeunes embryons de mammifères," *Comptes des rendues Société de Biologie*, CLV (1912), 1191.

[7]Nicholas, John. "Experiments on Developing Rats, I: Limits of Foetal Regeneration; Behavior of Embryonic Material in Abnormal Environments," *Anatomical Record*, LVIII (1934), 387-413.

[8]Saunders, John W. "The Proximo-Distal Sequence of Origin of the Parts of the Chick Wing and the Role of the Ectoderm," *Journal of Experimental Zoology*, CVIII (1948), 363-403.

[9]Zwilling, Edgar. "The Role of Epithelial Components in the Developmental Origin of the 'Wingless' Syndrome of Chick Embryos," *Journal of Experimental Zoology*, CXI (1949), 175-187.

The Naval War College Program

[*Continued from p. 89*]

Simultaneously, another of our senior students and M.A. recipients, an Army Colonel at present assigned to the staff of the Naval War College, makes the following comments: "World War II focussed my attention to new horizons, and brought vividly to mind the importance of Political Science or International Relations. After returning to the United States in 1947 from three years' duty in Europe, I frequently entertained the thought of requesting an assignment to a University for the purpose of studying International Relations.... It was my feeling that I should know a great deal more about the subject. Then, of course, the opportunity arose for which I shall always be most grateful....This is in retrospect, but what does the future hold for us? It is my considered judgment that the more I know in this field, the better I can perform my official duties in a foreign land or in a Pentagon office. The importance of such a course, it seems to me, is greater among Army officers than among those of the other services — the simple reason being that we are the majority on the ground rubbing elbows with so many peoples of so many lands....If we had had a large number of officers educated in the field of Political Science fifteen years ago, the outlook today might be quite different. *Perhaps we would have been more mature, thinking in terms of the political aspects as well as the military.*

"To the Army officer, it is my sincere feeling that the program conducted at the Naval War College last year has immeasurable importance."

(Quoted by permission from a personal letter to the author dated December 17, 1957; italics mine.)

The New Look in General Biology at Boston University

[*Continued from p. 82*]

and to serve as a stimulus for further scholarly work on the part of the student; and it should, moreover, show a few examples of the failure of scientific methodology in order to illustrate man's fallibility. The book will be accompanied by an original laboratory supplement and by a completely new manual of training aids based on the use of the Tecnifax.

With lecture, discussion section, laboratory, staff conference, testing, and textbook accessories all designed to serve the same basic objectives, it is our hope that we may effectively teach science in general, and biology in particular, as an exciting intellectual adventure.

References

Creighton, Harriet B. "Teaching Biology Today," *Survey of Biological Progress*, ed. George S. Avery, Jr., 1-14. Academic Press, Inc., 1949.

Behnke, John A. "New Approaches to the Curricula," *AIBS Bulletin*, VII, No. 1 (1957), 14-16.

Tiffney, Wesley N. "The Science Program in the Boston University General College," *Science in General Education*, ed. Earl J. McGrath. Dubuque, Iowa: William Brown Co., 1948.

Tippo, Oswald, "Some Approaches to the Teaching Problem," *AIBS Bulletin*, VII, No. 1 (1957), 16-19.

onel at
nents;
nd the
United
ght of
Rela-
nen, of
retro-
more I.
ntagon
s than
on the
a large
utlook
s of the

Naval

1957;

rsity

e stu-
entific
ccom-
new

esting,
s, it is
gy in

ss, ed.

(1957),

llege,"
1948.
, VII,